



Complete Summary

GUIDELINE TITLE

Protein intake in children.

BIBLIOGRAPHIC SOURCE(S)

Hodson E. Protein intake in children. Nephrology 2005 Dec;10(S5):S207-10.

Hodson E. Protein intake in children. Westmead NSW (Australia): CARI - Caring for Australians with Renal Impairment; 2005 Dec. 9 p. [16 references]

GUIDELINE STATUS

This is the current release of the guideline.

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SCOPE

DISEASE/CONDITION(S)

- Chronic kidney disease (CKD)
- End-stage kidney disease (ESKD)

GUIDELINE CATEGORY

Assessment of Therapeutic Effectiveness
Evaluation
Management

CLINICAL SPECIALTY

Family Practice
Nephrology

Nutrition
Pediatrics

INTENDED USERS

Dietitians
Physicians

GUIDELINE OBJECTIVE(S)

To review the available evidence for the benefits and adverse effects of recommended protein intakes in children with chronic kidney disease or end-stage kidney disease

TARGET POPULATION

Infants and children with chronic kidney disease or end-stage kidney disease receiving dialysis (peritoneal dialysis or hemodialysis)

INTERVENTIONS AND PRACTICES CONSIDERED

1. Consideration of optimal protein intake
2. Correction of nitrogen balance

MAJOR OUTCOMES CONSIDERED

- Creatinine clearance
- Glomerular filtration rate
- Growth
 - Weight
 - Height/length

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Databases searched: Medline (1996 to November Week 2 2003) and Embase (1980 to November 2003). Medical Subject Heading (MeSH) terms for kidney disease were combined with MeSH terms and text words for protein intake. The Cochrane Renal Group Specialised Register of randomised controlled trials was also searched for relevant trials not indexed in Medline.

Date of searches: 1 December 2003.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Levels of Evidence

Level I: Evidence obtained from a systematic review of all relevant randomized controlled trials (RCTs)

Level II: Evidence obtained from at least one properly designed RCT

Level III: Evidence obtained from well-designed pseudo-randomized controlled trials (alternate allocation or some other method); comparative studies with concurrent controls and allocation not randomized, cohort studies, case-control studies, interrupted time series with a control group; comparative studies with historical control, two or more single arm studies, interrupted time series without a parallel control group

Level IV: Evidence obtained from case series, either post-test or pretest/post-test

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Comparison with Guidelines from Other Groups
Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Recommendations of Others. Recommendations regarding the safety of protein-restricted diets in children with chronic kidney disease and end-stage kidney disease from the following groups were discussed: Kidney Disease Outcomes Quality Initiative, British Renal Association, Canadian Society of Nephrology, and European Best Practice Guidelines.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Definitions for the levels of evidence (I–IV) can be found at the end of the "Major Recommendations" field.

Guidelines

- a. Children with chronic kidney disease should have a protein intake equivalent to or above the Food and Agriculture Organisation/World Health Organisation/United Nations University (FAO-WHO-UNU) recommendations for healthy children. (*Level II evidence*)

Suggestions for Clinical Care

(Suggestions are based on Level III and IV sources)

- From nitrogen balance studies in 31 children on automated peritoneal dialysis (APD), it has been estimated that these children required a protein intake of 144% of WHO recommendations and an energy intake of 89% of recommended energy intake (REI) for height age to achieve a nitrogen balance of 50 mg/kg/day. Nitrogen balance should be corrected for dietary protein and energy intake.
- Studies in 15 children on continuous ambulatory peritoneal dialysis (CAPD) found that protein losses of 0.22 to 0.28 g/kg/day occur in infants and children aged below 6 years and were significantly higher than the losses of 0.09 to 0.19 g/kg/day seen in older children.
- Studies in children on CAPD found that protein losses correlated inversely with body weight, body surface area and serum albumin levels. Infants had peritoneal protein losses/m² body surface area (BSA) two-fold higher than children weighing more than 20 kg.
- Recommendations for protein intake in children on haemodialysis are based on nitrogen balance studies in adults.

Definitions:**Levels of Evidence**

Level I: Evidence obtained from a systematic review of all relevant randomized controlled trials (RCTs)

Level II: Evidence obtained from at least one properly designed RCT

Level III: Evidence obtained from well-designed pseudo-randomized controlled trials (alternate allocation or some other method); comparative studies with concurrent controls and allocation not randomized, cohort studies, case-control studies, interrupted time series with a control group; comparative studies with historical control, two or more single arm studies, interrupted time series without a parallel control group

Level IV: Evidence obtained from case series, either post-test or pretest/post-test

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS**TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS**

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS**POTENTIAL BENEFITS**

Appropriate management of protein intake in children with chronic kidney disease or end-stage kidney disease

POTENTIAL HARMS

Not stated

IMPLEMENTATION OF THE GUIDELINE**DESCRIPTION OF IMPLEMENTATION STRATEGY****Implementation and Audit**

Data on height, weight and head circumference in relation to energy, protein and sodium intake and the number of children who require nutritional supplementation

by enteral feeding could be collected and analysed by paediatric renal dietitians and members of the Australian & New Zealand Paediatric Nephrology Association (ANZPNA).

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Living with Illness

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

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ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2005 Dec

GUIDELINE DEVELOPER(S)

Caring for Australasians with Renal Impairment - Disease Specific Society

SOURCE(S) OF FUNDING

Industry-sponsored funding administered through Kidney Health Australia

GUIDELINE COMMITTEE

Not stated

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Author: Elisabeth Hodson

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

All guideline writers are required to fill out a declaration of conflict of interest.

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the [Caring for Australasians with Renal Impairment Web site](#).

Print copies: Available from Caring for Australasians with Renal Impairment, Locked Bag 4001, Centre for Kidney Research, Westmead NSW, Australia 2145

AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- The CARI guidelines. A guide for writers. Caring for Australasians with Renal Impairment. 2006 May. 6 p.

Electronic copies: Available from the [Caring for Australasians with Renal Impairment \(CARI\) Web site](#).

PATIENT RESOURCES

None available

NGC STATUS

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